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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,084

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Misako Sasagawa

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EXAMINER

MCCAIN, KYANA RASHAWN

ART UNIT

PAPER NUMBER

2821

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/585,084	<b>Applicant(s)</b> SASAGAWA ET AL.	
	<b>Examiner</b> KYANA R. ROBINSON	<b>Art Unit</b> 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/29/2006 and 02/19/2008</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 3, 4, 5 and 13 – 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Regarding claim 1, it is unclear what is meant by applicant's use of the term "slit" in Line 9 of claim 3. For purposes of examination, Examiner interprets the term "slit" to mean a space between the feed terminal and the radiation conductor.
4. Regarding claims 3, 4 and 5, it is unclear what is meant by applicant's use of the phrase "broad sides". For purposes of examination, Examiner interprets the phrase "broad sides" to mean the ends of the radiation conductor farthest away from the chip and center of the substrate.
5. Regarding claims 4 and 5, it is unclear what is meant by applicant's use of the term "flat" since the top surface of the substrate is considered a "flat" surface. For purposes of examination, Examiner interprets the phrase "flat" to mean substantially flush with the top surface of the substrate.
6. Regarding claims 13 - 23, it is unclear what is meant by the phrase "dispose on metal". For purposes of examination, Examiner interprets the phrase "dispose on metal" to mean formed on or of metal.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 1, 12, 13 and 23 rejected under 35 U.S.C. 102(b) as being anticipated by Tuttle (US 6,339,385).

9. Regarding claim 1, Tuttle discloses an antenna device (10, Fig. 6) comprising: a substrate (24, Fig. 6); a ground conductor provided on the bottom surface of the substrate (22, Fig. 6); a radiation conductor (32, Fig. 6), with a partial cutout (see Fig. 6, cutout located in middle of radiation conductor 32 where chip components disposed), provided on the top surface of the substrate (see Fig. 6, radiation conductor 32 atop substrate 24); a ground terminal (53, Fig. 6 and Col. 6, Ln. 31-31, terminal 53 connected to negative terminal of power source 52) provided in the partial cutout of the radiation conductor (Fig. 6); a conductor to connect the ground conductor with the ground terminal (55, Fig. 6, conductor 55 connects ground terminal 53 to ground conductor 22); and a feed terminal (58, Fig. 6) connected to the radiation conductor (see Fig. 6, feed terminal 58 connected to radiation conductor 32 through power source 52), wherein the ground terminal (53, Fig. 6) and the feed terminal (58, Fig. 6) are connected to an IC chip (54, Fig. 6), and a slit is provided between the radiation conductor and the feed terminal (see Fig. 6, slit is unlabeled open space between feed terminal 58 and radiation conductor 32).

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10. Regarding claim 12, Tuttle discloses the antenna of claim 1 and further discloses an insulation layer (Col. 3, Ln. 31 – 34) provided on an entire surface of the ground conductor (18, Fig. 6).

11. Regarding claims 13 and 23, Tuttle discloses the antennas of claims 1 and 12 respectively and further discloses the antenna device disposed on metal (Col. 4, Ln. 32-34 and Ln. 41-43).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 3, 7, 8, 14, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle (US 6,339,385) in view of Eberhardt (US 6,018,299).

14. Regarding claim 3, Tuttle discloses the antenna device of claim 1.

Tuttle does not disclose a difference in the width of the radiation conductor.

However, Eberhardt discloses a similarly structured antenna device (Fig. 1) wherein a width of the radiation conductor (22, Fig. 1) differs between in a central portion (28 and 30, Fig. 1) and in both broad sides (see Fig.1, broad sides 24 and 26 wider than central portions 28 and 30).

It would have been obvious to one of ordinary skill in the art to modify the antenna device in Tuttle such that the central portion of the radiation conductor differs in

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width than the end portions to facilitate use in electrostatic applications as disclosed in Eberhardt (Col. 4, N. 34 - 36).

15. Regarding claim 7, Tuttle discloses the antenna device of claim 1.

Tuttle does not disclose a step in the substrate.

However, Eberhardt discloses a similarly structured antenna device (414, Fig. 11) with a step (see Fig. 11 and Col. 8, Ln. 38-39, step formed in region of sloped section 420 and elbow 418) is provided on a surface of the substrate (see Fig. 11, step formed within substrate 116), and mounted parts of the IC chip (112, Fig. 11) including the ground terminal (138, Fig. 11) and the feed terminal (140, Fig. 11), and a portion of radiation conductor (126, Fig. 11) are disposed on the step (see Fig. 11, chip 112, terminals 138 and 140 and radiation conductor 124 and 126 within stepped portion of substrate 116).

It would have been obvious to one of ordinary skill in the art to modify the antenna in Tuttle to include a stepped section of substrate on which the chip and other mounted components are disposed to decrease overall antenna size and promote structural stability as taught in Eberhardt (Col. 7, Ln. 59-62).

16. Regarding claim 8, Tuttle discloses the antenna device of claim 1.

Tuttle does not disclose a step molded by a dielectric.

However, Eberhardt as applied to claim 7 above, teaches the use of a dielectric disposed over the circuit chip within the stepped substrate (Col. 7, Ln. 62 -65, teaching use of a potting material within the stepped substrate).

One of ordinary skill in the art would appreciate that ceramic is a potting material and a dielectric well known for its use in substrates. Therefore, it would have been obvious to one of ordinary skill in the art to use the potting material ceramic in the modified antenna of Tuttle to protect the IC circuit chip mounted on the step.

17. Regarding claims 14, 18 and 19, Tuttle discloses the antennas of claims 3, 7 and 8, as modified by Eberhardt, and further discloses the antenna device disposed on metal (Col. 4, Ln. 32-34 and Ln. 41-43).

18. Claims 4, 5, 6, 10, 11, 15, 16, 17, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle (US 6,339,385) in view of Brady et al. (US 6,100,804).

19. Regarding claim 4, Tuttle discloses the antenna device of claim 1.

Tuttle does not disclose that the radiation conductor is formed meandering in the central portion and flat in both broad sides.

However, Brady discloses a similarly structured antenna (850, Fig. 8B) wherein the radiation conductor (858, Fig. 8B) is formed meandering in the central portion (Col. 9, Ln. 9) and flat in both broad sides (Col. 7, Ln. 44-45, stating that meander structures typically occupy a single plane).

It would have been obvious to one of ordinary skill in the art to modify the antenna in Tuttle to include meandering of the radiation conductor in the central portion to reduce antenna dimensions while maintaining the electrical length of the antenna as taught in Brady (Col. 9, Ln. 10-14).

20. Regarding claim 5, Tuttle discloses the antenna device of claim 1.

Tuttle does not disclose that the radiation conductor is formed spiral in the central portion and flat in both broad sides.

However, Brady discloses a similarly structured antenna (700, Fig. 7A) with radiation conductors flat on the broad sides (see Figs. 7, 8 and 9, radiation conductors 708, 808, 858 and 906 are flush with substrate surface at ends farthest away from chip) and discusses use of multi-loop or spiral structures (Col. 7, Ln. 43 – 47).

Although Brady expresses a preference for the use of meander structures over multi-loop structures to reduce thickness of the antenna (Col. 7, Ln. 47-48), one of ordinary skill in the art would appreciate that one would use multi-loop structures to reduce the width of the antenna without reducing electrical length. Therefore, it would have been obvious to one of ordinary skill in the art to modify the antenna in Tuttle to use a spiral structure to maintain electrical length while reducing overall antenna length.

21. Regarding claim 6, Tuttle discloses the antenna device of claim 1 wherein the IC chip is positioned between the ground terminal and the feed terminal (see Fig. 6).

Tuttle does not disclose a dent formed between the ground terminal and the feed terminal wherein the IC chip is embedded in the dent.

However, Brady discloses a similarly structured antenna (770, Fig. 7A) with a dent (704, Fig. 7A) formed between the ground terminal and the feed terminal (see Fig. 7A, ground and feed terminals denoted by element 710) wherein the IC chip (706, Fig. 7A) is embedded in the dent (see Fig. 7A, chip 706 to be embedded in dent 704 and Col. 7, Ln. 21-24).



It would have been obvious to one of ordinary skill in the art to modify the antenna of Tuttle to include an IC chip embedded in a dent as in Brady to maintain thinness of the RFID package as taught in Brady (Col. 7, Ln. 27 -34).

22. Regarding claim 10, Tuttle discloses the antenna device of claim 1.

Tuttle does not disclose parasitic conductors disposed on the substrate.

However, Brady discloses a similarly structured antenna (800, Fig. 8A), wherein parasitic conductors (810, Fig. 8A) electrically insulated from the radiation conductor (see Fig. 8A, parasitic conductors 810 not connected to radiation conductor 808) are disposed on the substrate (802, Fig. 8A).

It would have been obvious to one of ordinary skill in the art to modify the antenna in Tuttle to include parasitic conductors as disclosed in Brady to modify the impedance of the antenna as taught is Brady (Col. 9, Ln. 14-17).

23. Regarding claim 11, Tuttle discloses the antenna device of claim 1 wherein the antenna is disposed on a substrate (Fig. 6).

Tuttle does not disclose that the substrate is formed from a flexible material.

However, Brady discloses a similarly structured antenna (700, Fig. 7A) wherein the substrate is formed from a flexible material (Col. 7, Ln. 18 and Col. 8, Ln. 12-16).

It would have been obvious to one of ordinary skill in the art to form the substrate in the antenna device of flexible material as taught in Brady to promote the use of the RFID tags in flexible products such as hospital wrist bands as taught in Brady (see Fig. 19).

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24. Regarding claims 15, 16, 17, 21 and 22, Tuttle discloses the antennas of claims 4, 5, 6, 10 and 11, as modified by Brady, and further discloses the antenna device disposed on metal (Col. 4, Ln. 32-34 and Ln. 41-43).

25. Claims 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle (US 6,339,385) in view of Nagumo et al. (US 6,281,848).

26. Regarding claim 9, Tuttle discloses the antenna device of claim 1.

Tuttle does not disclose that the substrate is provided with internal cavities.

However Nagumo discloses an antenna device wherein the substrate (1, Fig. 6A) is provided with cavities internally (26, Fig. 6A and 6B and Col. 9, LN. 21-24).

It would have been obvious to one of ordinary skill in the art to modify the antenna device of Tuttle such that the substrate has one or more internal cavities "to achieve wider bandwidth and higher gain by reducing effective dielectric constant of the dielectric substrate" as taught by Nagumo (Col. 9, Ln. 36-40).

27. Regarding claim 20, Tuttle discloses the antenna of claim 9, as modified by Nagumo, and further discloses the antenna device disposed on metal (Col. 4, Ln. 32-34 and Ln. 41-43).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KYANA R. ROBINSON whose telephone number is (571) 270-7918. The examiner can normally be reached on M- Th 7:30am - 6:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Owens can be reached on 571-272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KRR

/Douglas W Owens/  
Supervisory Patent Examiner, Art Unit 2821  
July 30, 2009